WHAT IS CLAIMED IS:

1. An image processing device to perform image processing, in which a two-demensional image is formed of a group of pixel data which are a matrix of plural pixel data, wherein said group of pixels are divided into small blocks formed of a plurality of said pixel data, a plurality of said small blocks form a large block, and in each of the large block each of the small blocks is defined and arranged by certain rules, said image processing device comprising:

a plurality of storages, in which each of said small blocks located according to said rules forming each of said large blocks has said pixel data independently, and by specifying an address assigned to each small block, a plurality of pixel data in a pertinent small block is simultaneously read out; and

a calculator comprising a coefficient matrix in which a matrix of plural coefficients are arranged, so that said plural coefficients are multiplied by each of respectively corresponding pixel data and summed up; and

wherein said calculator multiplies each of the pixel data in each of said small blocks forming said one large block, by said coefficient matrix rearranged in to a predetermined order.

2. The image processing device according to claim 1, further comprising an coefficient storage

section to store said matrix coefficient specified, an coefficient matrix converting section to rearrange the coefficient matrix into a predetermined order and correspond them to the pixel data, and an adding section to obtain a sum of the pixel data, the pixel data being multiplied by the coefficients.

3. The image processing device according to claim 1, wherein said adding section is provided for each of said storages in a neighborhood of each of the storage, and each added result of each adding section is independently transferred.

4. The image processing device according to claim 1, wherein said small block is formed of said pixel data of $m_1 x m_2$, said large block is formed of the small blocks of $l_1 x l_2$, said coefficient matrix is formed of said coefficients of $n_1 x n_2$, and the following equations are fulfilled:

$n_1 \leq m_1 (l_1 - 1) + 1$

and

$n_2 \leq m_2 (l_2 - 1) + 1$

5. The image processing device according to claim 1, wherein, by specifying each address of each of said small block forming said one large block, said coefficient matrix is shifted by said calculator, not causing modification of pertinent addresses of the small blocks, and a plurality of said sums are obtained corresponding to each of said rearrangement performed to each of said coefficient matrix.

6. An image processing method to perform image processing, in which a two-dimensional image is formed of a group of pixel data which are a matrix of plural pixel data, wherein:

said group of pixel data are divided into a plurality of small blocks formed of said pixel data, a plurality of small blocks further form a large block, in each of which each small block is defined and arranged by certain rules, and a plurality of coefficients are arranged in the form of matrix to form a coefficient matrix;

each of said small blocks located according to said rules forming each of said large blocks stores pixel data independently in each storage, and by specifying an address assigned to each small block, a plurality of pixel data in a pertinent small block is simultaneously read out from said storage; and

said respective pixel data of each of the small block forming said one large block, which are read out from a plurality of said storage, are multiplied by said coefficients rearranged into a predetermined order and summed up.

7. The image processing method according to claim 6, wherein said small block is formed of said pixel data of $m_1 x m_2$, said large block is formed of the small blocks of $l_1 x l_2$, said coefficient matrix is formed of said coefficients of $n_1 x n_2$, and the following equations are fulfilled:

$n_1 \leq m_1 (l_1 - 1) + 1$

and

$n_2 \leq m_2 (l_2 - 1) + 1$

8. The image processing method according to claim 6, wherein, by specifying each address of each of said small block forming said one large block, said coefficient matrix is shifted by said calculator, not causing modification of pertinent addresses of the small blocks, and a plurality of said sums are obtained corresponding to each of said rearrangement performed to each of said coefficient matrix.